

Wetland Restoration Targeting

New Guidance in West Virginia

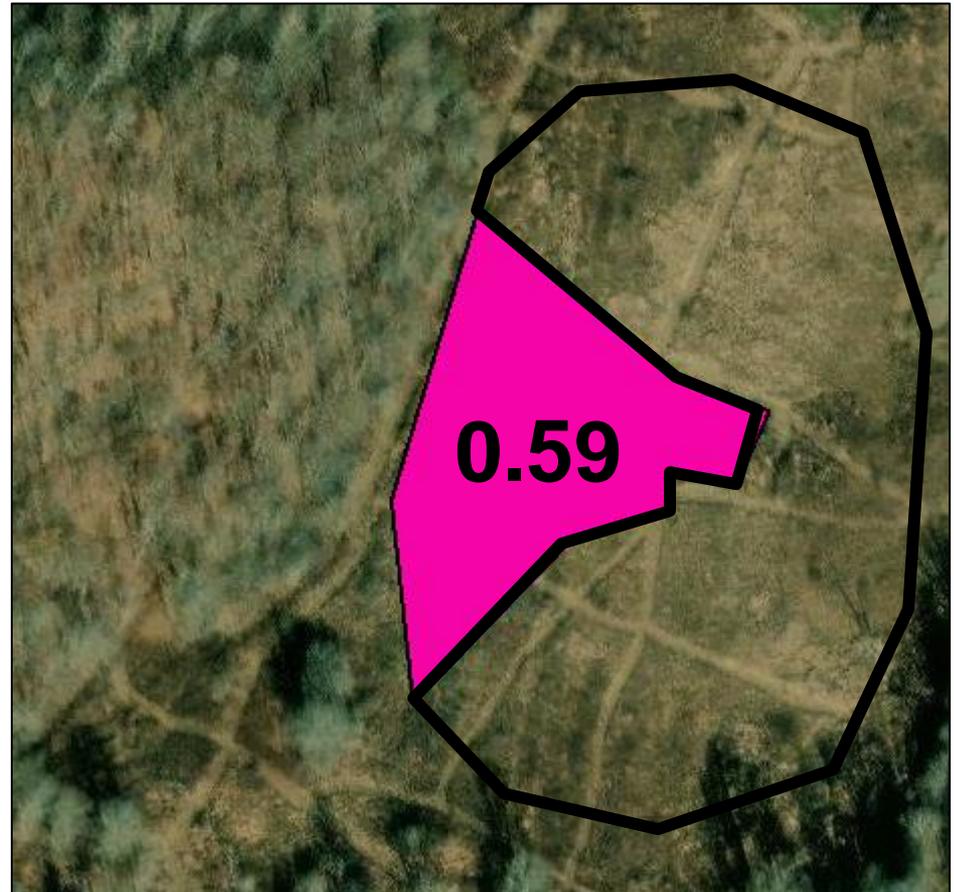
- **Performance Standards (draft)**
 - Minimum requirements for credit release
- **WVWRAM Restoration Supplement**
 - How much mitigation credit can you get?

Presented by Elizabeth Byers
WVDEP Watershed Assessment Branch

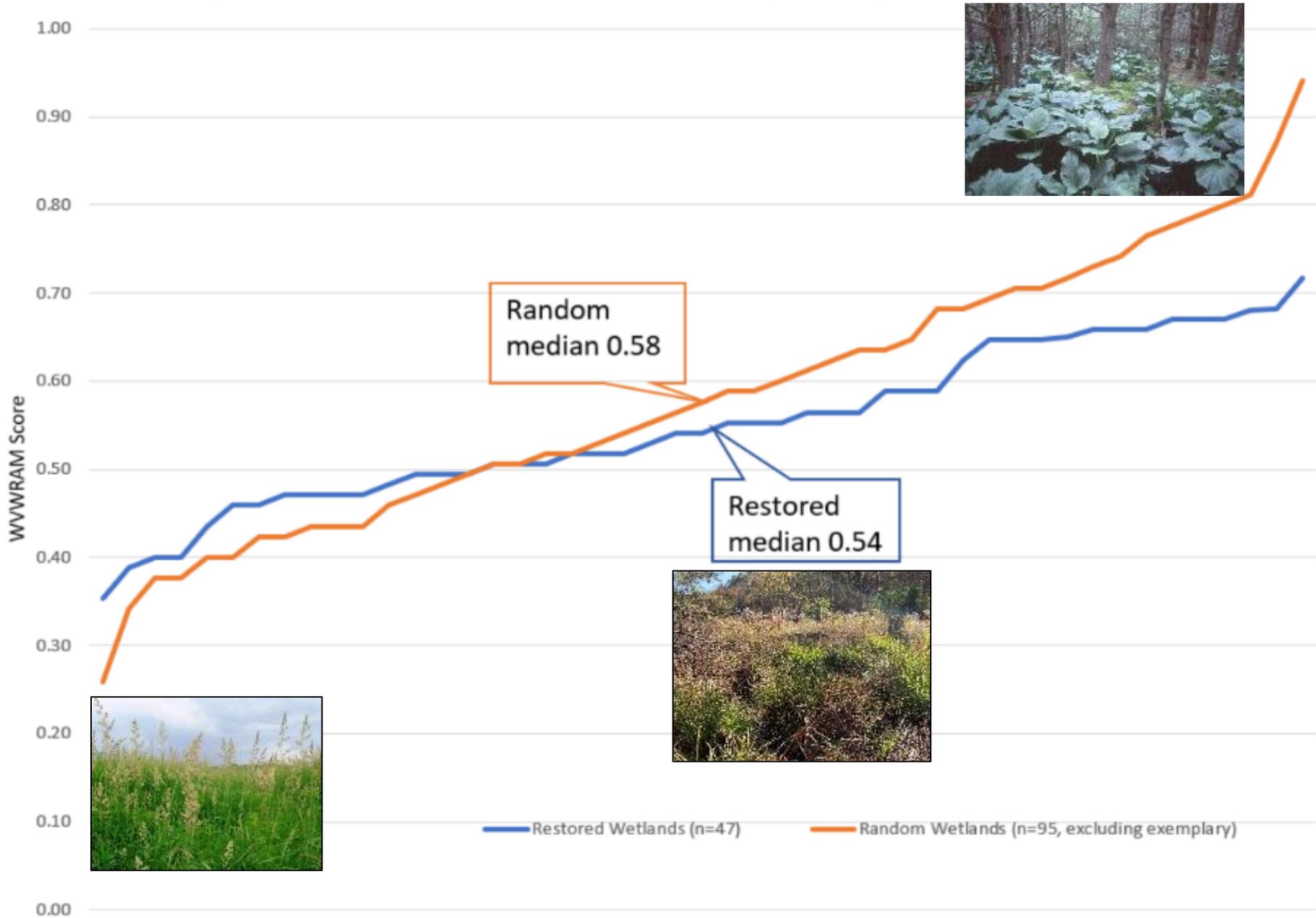


Meadow River Mitigation Site

- 1 acre met minimum requirements; Wetland Function Score of 0.59 x 1 acre = 0.59 credit units
- Additional 2.5 acres did not meet minimum requirements: 0 or reduced credit units



Comparison of Restored Sites with Random Sites (excluding Exemplary Randoms)



Restored Wetlands (n=47)

Random Wetlands (n=95, excluding exemplary)

Random median 0.58

Restored median 0.54



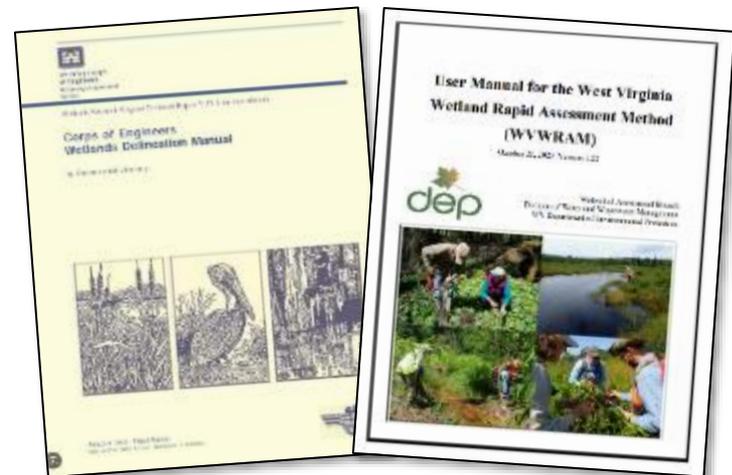
Wetland Mitigation Performance Standards (under review)

Jessica Bryzek compiled performance standards nationwide (327 standards from 24 states)



Restoration

- **USACE delineation criteria**
- **WVWRAM wetland function score increases over time**





Wetland Mitigation Performance Standards (under review)

Hydrology

No more than **10%** in **open water**



Soils

Hydric soils exposed AND

bulk density < 90 lbs/ft³ (loamy) or < 110 lbs/ft³ (sandy)



Wetland Mitigation Performance Standards (under review)

Vegetation

- **Planting mix** has no more than 20% of a single species (minimum 5 species).
- Planting mix is drawn from **WV Planting Tool** (restoration option) for site location.



- **Highly invasive species** < 5% cover per species AND < 10% total cover.
- **Diverse vegetation** present with no single species > 40% cover.
- **Rapid FQA score** increases each monitoring year (abundance weighted mean CoC for plants with >10% cover).

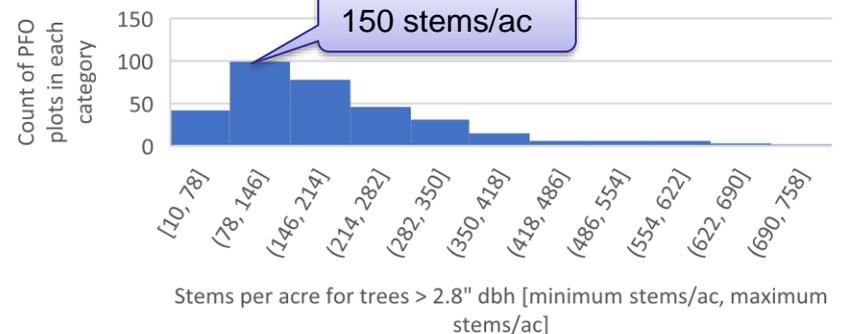
Wetland Mitigation Performance Standards (under review)

Forested wetland vegetation

- **Initial planting density** of at least 400 stems/acre, native species FAC or wetter. Once all stems > 3" dbh and 6' height, at least 150 stems/acre. Once **30% canopy cover and 6' hgt** achieved, maintenance of this minimum cover and height.
- At least 20% of tree species produce **hard or soft mass** AND tree layer not dominated by **box elder or black willow**.
- Year 5 & 10 reports: **avg tree height** has increased by 10%/yr OR total **stem area at groundline** has increased by 50%/yr. Applies until height is 6' and canopy cover is 30%.



Frequency plot of stems per acre for trees > 2.8" dbh in 334 high quality forested palustrine plots in West Virginia



Wetland Mitigation Performance Standards (under review)

Scrub/shrub wetland vegetation

- **Native stem density** of at least 400 stems/ac FAC or wetter, native, until 30% cover is attained.
- **Native or non-invasive herbaceous cover** >60% year 1, thereafter 80%, until woody vegetation cover attains 30%. Combined woody and herbaceous cover at least 90%.

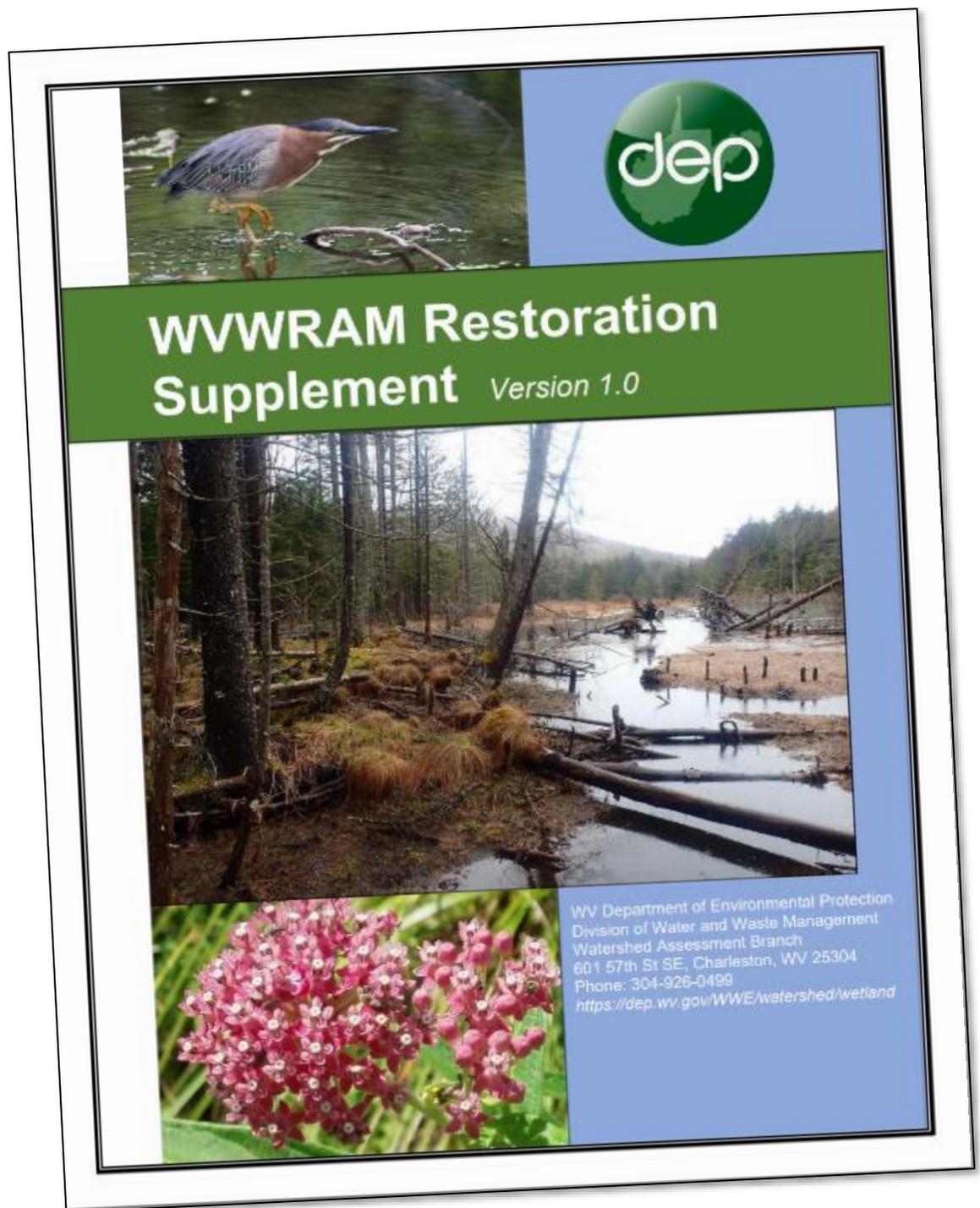


Emergent wetland vegetation

- **Native or non-invasive herbaceous cover** >60% year 1, thereafter 90%.

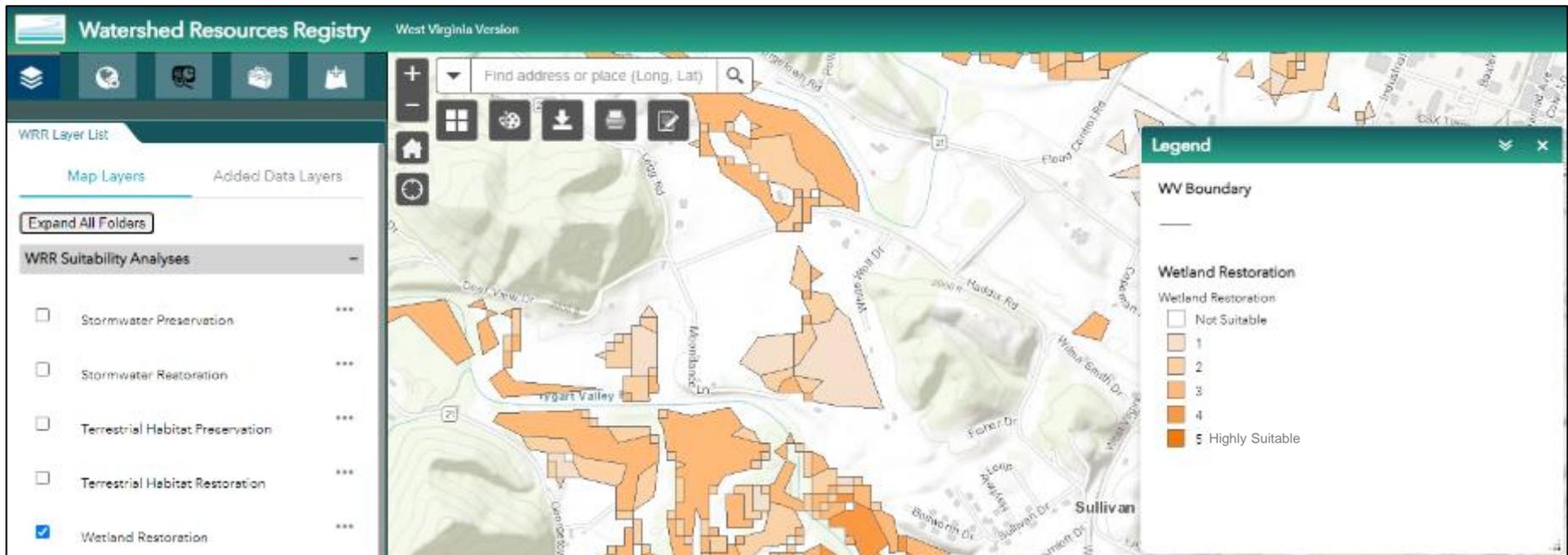
WVWRAM Restoration Supplement

- Requested by IRT and mitigation bankers
- Explains how specific restoration actions will increase WVWRAM score
- Incentivizes restoration to high-functioning wetlands



Find a restorable site

1. Hydric soils are present (may be buried).
2. Existing stressors can be removed or reduced.



Find a good neighborhood

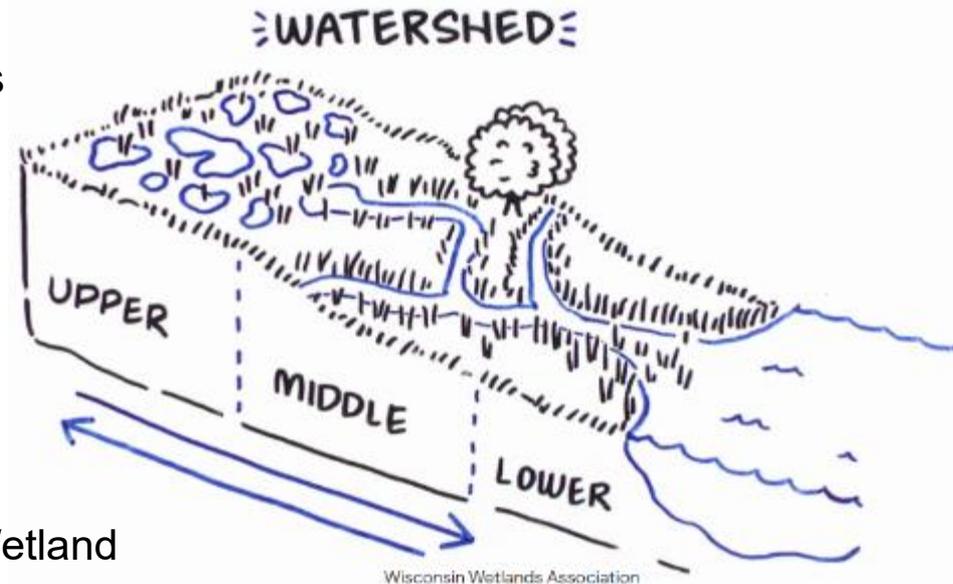
Which WVWRAM metrics are a largely function of location rather than design?

Uncommon Geology or Substrate

- Karst and Limestone-influenced Wetlands
- Peatlands

Hydrology

- Floodplain Location
- Headwater Location
- Watershed Position
- Impaired Waters/Discharges Impacting Wetland
- Wetland Discharges to Impaired Waters
- Runoff from Contributing Watershed





Find a good neighborhood

Which WVWRAM metrics are a largely function of location rather than design?

Buffer Condition and Extent

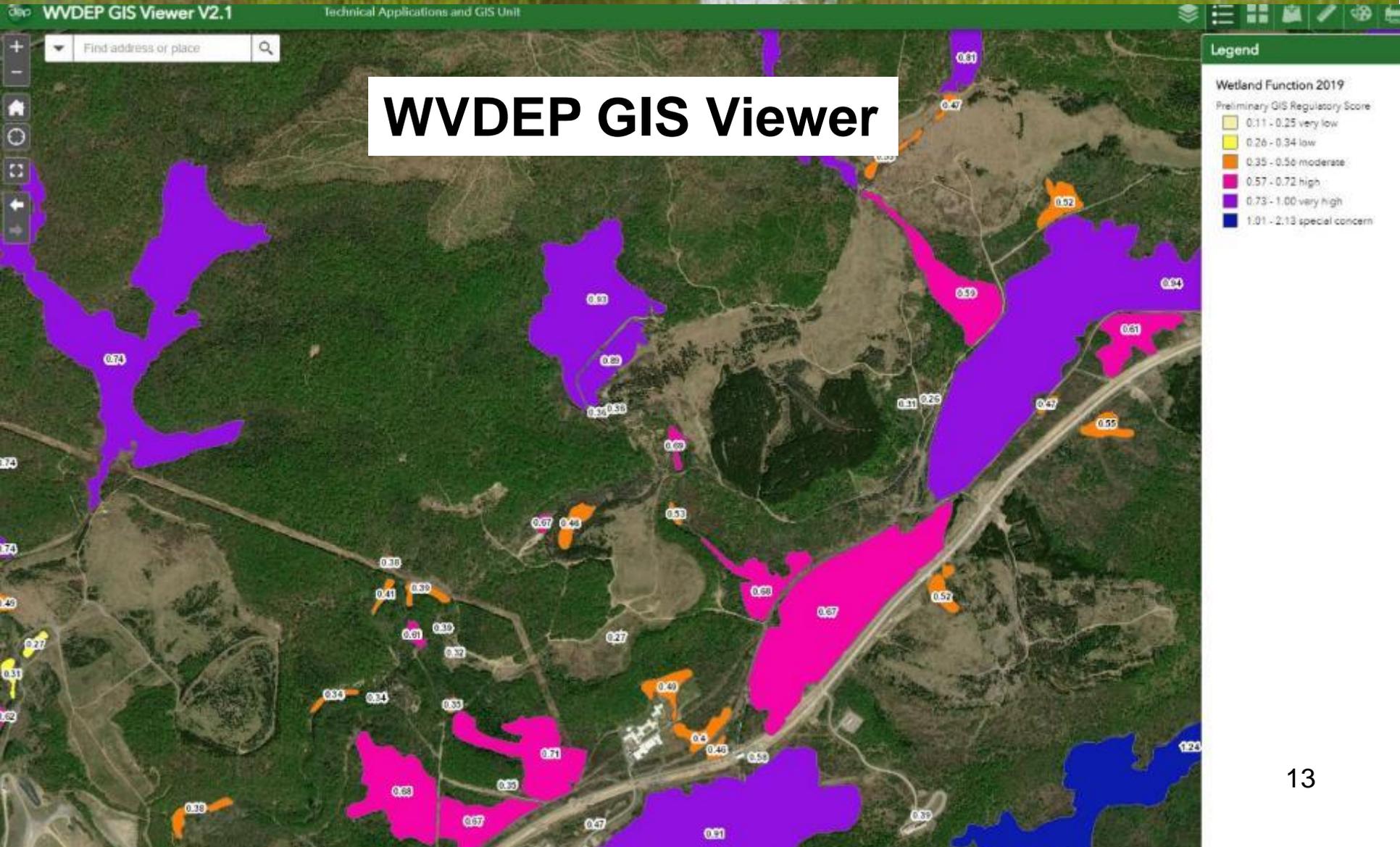
- Roads and Railroads
- Land Use Disturbance in Buffer

Landscape or Watershed Scale

- Land Use Disturbance in Contributing Watershed
- Aquatic Area Abundance
- Biodiversity Rank of 12-digit HUC
- Water Quality Issues in 12-digit HUC
- Mean Slope of Contributing Watershed
- Wetland Breeding Bird Occupancy



Level 1 function & condition score for all mapped wetlands



Restoration Actions: Restore hydrology

- **Remove hydrologic stressors** to restore intact hydrology (0-0.071)
- **Create depressions** that store water for several days after a storm (0-0.059)
- **Re-connect wetland to adjacent stream** (0-0.024)
- Increase portion of wetland that is **flooded by stream** (0-0.024)
- Increase the complexity of the **wetland-stream boundary** (0-0.024)



Restoration Actions: Expose hydric soil, add micro- and macro-topography

- **Expose buried hydric soils** containing clay or organic material near surface, or have them develop naturally after fixing hydrology (0-0.035)
- Add **structural patches** such as coarse woody debris (0-0.035)
- Increase the proportion of wetland with **seasonal ponding/saturation** (0-0.035)
- Create **microtopography** (0-0.024)
- **Remove soil stressors**/compactors such as ATVs, livestock (0-0.024)
- Create a diffuse and irregular **upland-wetland boundary** (0-0.012)



Restoration Actions: Vegetation

Note that vegetation is also the most reliable indicator of successful improvements to hydrology/soil.

- **Improve floristic quality** (0-0.129)
- **Remove livestock or stop mowing:** persistent ungrazed veg (0-0.059)
- **Plant woody veg** (0-0.059)
- Create multiple natural vegetation types: horizontal **interspersion** (0-0.035)
- Create several **strata in forested** wetland (e.g., remove herbivory to restore shrub/herb layer) (0-0.035)
- Create vegetated wetland 10m wide that **fringes** open water (0-0.012)





Restoration Actions: Buffer rehabilitation

- Restore **natural vegetation and remove stressors** from **10m** perimeter (0-0.024)
- Restore natural vegetation and remove stressors from **50m** water quality buffer (0-0.035)
- Restore natural vegetation and remove stressors from **300m** wildlife buffer (0-0.024)





Thank you!
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